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2 0 NOV 2006

Docket No. 12810-00067-US
(PATENT)

Legal Staff
International Division

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Patent Application of:
Karl-Heinz Kogel et al.

Application No.: 10/522,106

Confirmation No.: 9243

Filed: January 24, 2005

Art Unit: N/A

For: METHOD FOR OBTAINING THE
PATHOGENIC RESISTANCE IN PLANTS

Examiner: Not Yet Assigned

REQUEST FOR RECONSIDERATION

MS PCT Legal Affairs
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Dear Sir:

The Applicants respectfully request reconsideration of the Decision on Petition mailed October 2, 2006. Applicants respectfully request reconsideration of the Request for Withdrawal of Holding of Abandonment, or in the alternative that the Petition under 37 CFR § 1.137 (b) be granted, and the application be forwarded to the Examiner for Examination.

I. Request For Reconsideration of the Request for Withdrawal of Holding of Abandonment

In the Decision On Petition mailed October 2, 2006, the PCT Legal Examiner asserted that because the "Assignment of Application" allegedly did not specifically identify the application being assigned, that the submission of Power of Attorney and change of correspondence address submission of June 3, 2005, "did not properly establish the right of the assignee to take action in this case, and so the submission was not effective in changing the pre-existing correspondence address of record." Applicants respectfully disagree and strongly urge reconsideration of the Request for the following reasons.

1. The "Assignment of Application" was submitted with the initial filing of the application on January 24, 2005, as evidenced by the date on the Recordation Form Cover Sheet (attached as Exhibit 1 with the "Assignment of Application"; previously submitted in the Request for Withdrawal of Holding of Abandonment filed on April 28, 2006 as part of Exhibit A). The date on the cover sheet is January 24, 2005, which is the same as the date of filing of the application. The U.S. application number could only be given out after the initial filing of the application. Therefore, on the initial filing date of the application which included the "Assignment of Application" with the proper cover sheet, it would have been impossible for the U.S. application number to be indicated.

2. The inventors signed the "Assignment of Application" on July 30, 2003, shortly after the international filing date of July 14, 2003, assigning their entire rights to BASF Plant Science GmbH. Therefore, at the time of filing the U.S. national stage application on January 24, 2005, the "Assignment of Application" was already executed and could not have specifically identified the application by its U.S. application number.

3. Furthermore, toward the top right hand corner of each page of the "Assignment of Application" document, the number "0000053765" is printed (see Exhibit 1). This number represents the assignee's internal docket number. This same number also appears as a header on the specification as filed. This same number also appears on the top right hand corner of each page of the "Declaration, Power of Attorney and Petition" (attached as Exhibit 2). This Declaration was signed by the inventors on the same day as the "Assignment of Application" on July 30, 2003 and was also submitted to the U. S. Patent and Trademark Office with the initial filing of the application on January 24, 2005. Therefore, the "Assignment of Application" does specifically identify the application which is being assigned, contrary to the Examiner's assertion.

4. Since the Power of Attorney and change of correspondence address submission of June 3, 2005, Applicants received the Notice of Recordation of Assignment Document on November 8, 2005, indicating that the "Assignment of Application" was recorded in the U.S. Patent and Trademark Office on January 24, 2005 (attached as Exhibit 3). Such recordation can be found at Reel/Frame No. 016749/0176. The date of recordation corresponds to the date on the

recordation cover sheet and the date of the initial U.S. filing. The assignee of record is BASF Plant Science GmbH as of January 24, 2005, the date of filing the initial application. Therefore, when the Power of Attorney and change of correspondence address was submitted to the U.S. Patent and Trademark Office, BASF Plant Science GmbH was already the assignee of record with the authority and power to revoke previous powers of attorney and appoint new attorneys pursuant to 37 CFR § 3.71. Furthermore, when the Power of Attorney and change of correspondence address was submitted to the U.S. Patent and Trademark Office, the Transmittal of Power of Attorney indicated that the cover sheet and "Assignment of Application" document were enclosed because the Notice of Recordation had not yet been received and that these had been submitted with the initial filing of the application (as also indicated on the initial Request for Withdrawal of Holding of Abandonment). Therefore, the submission of the Power of Attorney and change of correspondence address was not to establish the rights of the assignee, since these were already established with the initial filing of the application, but to appoint new attorneys and change the correspondence address. Additionally, as required, a Statement under 37 CFR § 3.73(b) and a duly completed and executed "Power of Attorney to Prosecute Applications Before the USPTO" form were submitted pursuant to 37 CFR § 3.71 with the Transmittal of Power of Attorney.

5. Because the "Assignment of Application" was submitted with the initial filing of the application and identified the application by number, which number is found on the executed Declaration (Exhibit 2) and in the application as filed and because the "Assignment of Application" was duly recorded as of the application initial filing date of January 24, 2005 (as evidenced on the Notice of Recordation, Exhibit 3), Applicants submit that the Power of Attorney and change of correspondence address of June 3, 2005 appointing Connolly Bove Lodge & Hutz LLP was properly submitted by the assignee of record, BASF Plant Science GmbH.

6. A Notice of Missing Parts was mailed July 1, 2005 to Morrison & Foerster. BASF Plant Science GmbH appointed Connolly Bove Lodge & Hutz LLP with the Power of Attorney and change of correspondence address submission of June 3, 2005. Therefore, the Notice of Missing Parts was mailed to the incorrect address of record, which ultimately caused the application to go abandoned.

Applicants respectfully submit that the "Assignment of Application" submitted with the initial filing of the application on January 24, 2005 was effective in establishing the right of the assignee to take action in this case, for the reasons explained above.

Applicants respectfully request reconsideration of the Request for Withdrawal of Holding of Abandonment, because Applicants submitted a proper Power of Attorney with change of correspondence address, as explained above, prior to the mailing of the Notice of Missing Parts. Accordingly, Applicants also request reimbursement of the petition fee under § 1.17(m).

II. In the Alternative, Reconsideration of the Petition under 37 C.F.R. § 1.137 (b)

Further to the Decision On Petition mailed October 2, 2006, Applicants submit herewith a proper reply to the Notification to Comply with Requirements for Patent Applications Containing Nucleotide and/or Amino Acid Sequence Disclosures which the Examiner kindly provided with their Decision On Petition. The Reply consists of a copy of the Notification to Comply, a Response to the Notification to Comply and Amendment, a replacement paper copy of the Sequence Listing which conforms to 37 CFR §§ 1.821-1.825, a diskette containing the Sequence Listing in computer readable form, and a Statement to Support Filing and Submission in Accordance with 37 CFR §§ 1.821-1.825.

Although Applicants strongly urge reconsideration of the Request for Withdrawal of Holding of Abandonment, in the alternative, Applicants request that the Application be revived. The Petition fee has been paid. Applicants state that the entire delay in filing the required reply from the due date for the reply until the filing of a grantable petition pursuant 37 CFR § 1.137(b)(3) was unintentional. Applicants submit that with the attached reply all requirements under 37 CFR § 1.137(b) have been met.


Furthermore, Applicants respectfully request that a Notice of Acceptance of Power of Attorney be issued and the correspondence address be appropriately changed. If the Examiner finds that the Power of Attorney and change of correspondence address is not effective in

making these changes, then Applicants respectfully request assistance in what further would be required.

This response is filed within the two-month period for response from the mailing of the Decision on Petition, to and including December 4, 2006, pursuant to 37 CFR § 1.7(a). No fee is believed due. However, if a fee is due, the Commissioner is hereby authorized to charge or credit our Deposit Account No. 03-2775, under Order No. 12810-00067-US from which the undersigned is authorized to draw.

A prompt and favorable action is earnestly solicited.

Respectfully submitted,

By 

Roberte M. D. Makowski

Registration No.: 55,421

CONNOLLY BOVE LODGE & HUTZ LLP

Correspondence Customer Number: 23416

1007 North Orange Street, P.O. Box 2207

Wilmington, Delaware 19899

(302) 888-6410 (Tel), (302) 658-5614 (Fax)

Attorney for Applicants

#8

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PTO/SB/92 (09-04)

Approved for use through 07/31/2006. OMB 0651-0031

U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE

Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number.

Legal Staff
International Division
Application No.: 10/522,106

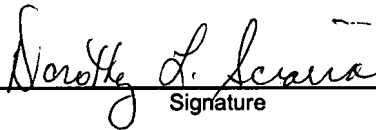
Attorney Docket No.: 12810-00067-US

Certificate of Mailing under 37 CFR 1.8

I hereby certify that this correspondence is being deposited with the United States Postal Service with sufficient postage as first class mail in an envelope addressed to:

MS PCT
ATTENTION : PCT Legal Office
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

on November 15, 2006
Date


Signature

Dorothy L. Sciarra

Typed or printed name of person signing Certificate

Registration Number, if applicable

(302) 658-9141

Telephone Number

Note: Each paper must have its own certificate of mailing, or this certificate must identify each submitted paper.

Request for Reconsideration (5 pages)
Exhibit 1 – Recordation Form Cover Sheet and Assignment of Application (3 pages)
Exhibit 2 – Declaration, Power of Attorney and Petition (3 pages)
Exhibit 3 – Notice of Recordation and Assignment Document (3 pages)
Response to Notification to Comply with Requirements for Patent Applications
Containing Nucleotide and/or Amino Acid Sequence Disclosures and Amendment (3
pages)
Copy of Notification to Comply with Requirements for Patent Applications Containing
Nucleotide and/or Amino Acid Sequence Disclosures (9 pages)
Sequence Listing (CRF copy – 1 Disk and Paper copy (54 pages))
Statement to Support Filing and Submission in Accordance with 37 CFR §§1.821
through 1.825 (2 pages)
Certificate of Mailing (1 page)
Postcard



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
 United States Patent and Trademark Office
 Address: COMMISSIONER FOR PATENTS
 P.O. Box 1450
 Alexandria, Virginia 22313-1450
 www.uspto.gov

U.S. APPLICATION NUMBER NO.	FIRST NAMED APPLICANT	ATTY. DOCKET NO.
10/522,106	Karl-Heinz Kogel	532622010500

INTERNATIONAL APPLICATION NO.	
PCT/EP03/07589	
LA. FILING DATE	PRIORITY DATE
07/14/2003	

Morrison & Foerster
 1650 Tysons Boulevard, Suite 300
 McLean, VA 22102

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20 NOV 2006

Legal Staff
 International Division

CONFIRMATION NO. 9243
 371 FORMALITIES LETTER



OC000000016430884

Date Mailed: 07/01/2005

NOTIFICATION TO COMPLY WITH REQUIREMENTS FOR PATENT APPLICATIONS CONTAINING NUCLEOTIDE AND/OR AMINO ACID SEQUENCE DISCLOSURES

Applicant is given **TWO MONTHS FROM THE DATE OF THIS NOTICE** within which to file the items indicated below to avoid abandonment. Extensions of time may be obtained under the provisions of 37 CFR 1.136(a).

- A copy of the "Sequence Listing" in computer readable form has been submitted. However, the content of the computer readable form does not comply with the requirements of 37 CFR 1.822 and/or 1.823, as indicated on the attached copy of the marked -up "Raw Sequence Listing." Applicant must provide a substitute computer readable form (CRF) copy of the "Sequence Listing" and a statement that the content of the sequence listing information recorded in computer readable form is identical to the written (on paper or compact disc) sequence listing and, where applicable, includes no new matter, as required by 37 CFR 1.821(e), 1.821(f), 1.821(g), 1.825(b), or 1.825(d).

Applicant is cautioned that correction of the above items may cause the specification and drawings page count to exceed 100 pages. If the specification and drawings exceed 100 pages, applicant will need to submit the required application size fee.

For questions regarding compliance to 37 CFR 1.821-1.825 requirements, please contact:

- For Rules Interpretation, call (571) 272-0951
- For Patent Software Program Help, call Patent EBC at 1-866-217-9197 or directly at 703-305-3028 / 703-308-6845 between the hours of 6 a.m. and 12 midnight, Monday through Friday, EST.
- Send e-mail correspondence for Patent Software Program Help @ ebc@uspto.gov

Applicant is reminded that any communications to the United States Patent and Trademark Office must be mailed to the address given in the heading and include the U.S. application no. shown above (37 CFR 1.5)

*A copy of this notice **MUST** be returned with the response.*

LAMONT M HUNTER

Telephone: (703) 308-9140 EXT 201

PART 2 - OFFICE COPY

U.S. APPLICATION NUMBER NO.	INTERNATIONAL APPLICATION NO.	ATTY. DOCKET NO.
10/522,106	PCT/EP03/07589	532622010500

FORM PCT/DO/EO/922 (371 Formalities Notice)

STIC Biotechnology Systems Branch

RAW SEQUENCE LISTING ERROR REPORT

The Biotechnology Systems Branch of the Scientific and Technical Information Center (STIC) detected errors when processing the following computer readable form:

Application Serial Number: 10/522,106

Source: PCT

Date Processed by STIC: 2-2-05

THE ATTACHED PRINTOUT EXPLAINS DETECTED ERRORS.

PLEASE FORWARD THIS INFORMATION TO THE APPLICANT BY EITHER:

- 1) INCLUDING A COPY OF THIS PRINTOUT IN YOUR NEXT COMMUNICATION TO THE APPLICANT, WITH A NOTICE TO COMPLY or,
- 2) TELEPHONING APPLICANT AND FAXING A COPY OF THIS PRINTOUT, WITH A NOTICE TO COMPLY

FOR CRF SUBMISSION AND PATENTIN SOFTWARE QUESTIONS, PLEASE CONTACT MARK SPENCER, TELEPHONE: 571-272-2510; FAX: 571-273-0221

TO REDUCE ERRORED SEQUENCE LISTINGS, PLEASE USE THE CHECKER VERSION 4.2.2 PROGRAM, ACCESSIBLE THROUGH THE U.S. PATENT AND TRADEMARK OFFICE WEBSITE. SEE BELOW FOR ADDRESS:

<http://www.uspto.gov/web/offices/pac/checker/chkrnote.htm>

Applicants submitting genetic sequence information electronically on diskette or CD-Rom should be aware that there is a possibility that the disk/CD-Rom may have been affected by treatment given to all incoming mail.

Please consider using alternate methods of submission for the disk/CD-Rom or replacement disk/CD-Rom.

Any reply including a sequence listing in electronic form should NOT be sent to the 20231 zip code address for the United States Patent and Trademark Office, and instead should be sent via the following to the indicated addresses:

1. EFS-Bio (<<http://www.uspto.gov/ebs/efs/downloads/documents.htm>> , EFS Submission User Manual - ePAVE)
2. U.S. Postal Service: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450
3. Hand Carry, Federal Express, United Parcel Service, or other delivery service (EFFECTIVE 01/14/05):
U.S. Patent and Trademark Office, Mail Stop Sequence, Customer Window, Randolph Building, 401 Dulany Street, Alexandria, VA 22314

Revised 01/24/05



PCT

RAW SEQUENCE LISTING

DATE: 02/02/2005

PATENT APPLICATION: US/10/522,106

TIME: 15:31:41

Input Set : A:\Sequence Listing.txt

Output Set: N:\CRF4\02022005\J522106.raw

2 <110> APPLICANT: Kogel, Karl-Heinz
 3 Huckelhoven, Ralph
 4 Trujillo, Marco
 6 <120> TITLE OF INVENTION: Method for Obtaining a Pathogen Resistance in Plants
 8 <130> FILE REFERENCE: 532622010500
 C--> 10 <140> CURRENT APPLICATION NUMBER: US/10/522,106
 11 <141> CURRENT FILING DATE: 2005-01-24
 13 <160> NUMBER OF SEQ ID NOS: 24
 14 <170> SOFTWARE: PatentIn Ver. 2.1

ERRORED SEQUENCES

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 47 <212> TYPE: PRT
 48 <213> ORGANISM: Hordeum vulgare
 W--> 49 <400> SEQUENCE: 2
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 51 1 5 10 15
 52 Ile Glu Met His Asn Tyr Leu Thr Ser Val Tyr Glu Glu Gly Asp Ala
 53 20 25 30
 54 Arg Ser Ala Leu Ile Thr Met Leu Gln Ala Leu Asn His Ala Lys Asn
 55 35 40 45
 E--> 56 Gly Val Asp Val Val Ser Xaa Thr Arg Val Arg Thr His Phe Ala Arg
 57 50 55 60
 58 Pro Asn Phe Lys Arg Val Leu Ser Lys Val Ala Ala Lys His Pro Tyr
 59 65 70 75 80
 60 Ala Lys Ile Gly Val Phe Tyr Cys Gly Ala Pro Val Leu Ala Gln Glu
 61 85 90 95
 62 Leu Ser Asn Leu Cys His Glu Phe Asn Gly Lys Cys Thr Thr Lys Phe
 63 100 105 110
 2181 <210> SEQ ID NO: 16
 2182 <211> LENGTH: 939
 2183 <212> TYPE: PRT
 2184 <213> ORGANISM: Nicotiana tabacum
 W--> 2185 <400> SEQUENCE: 16
 2186 Met Gln Asn Ser Glu Asn His His Pro His His Gln His His His Ser
 2187 1 5 10 15
 2188 Asp Thr Glu Ile Ile Gly Asn Asp Arg Ala Ser Tyr Ser Gly Pro Leu
 2189 20 25 30
 2190 Ser Gly Pro Leu Asn Lys Arg Gly Gly Lys Lys Ser Ala Arg Phe Asn
 2191 35 40 45

pls explain
"Xaa" location. Does Not Comply
Corrected Diskette Needed
(P5.1, 3)
See error explanation
on page 5.

RAW SEQUENCE LISTING

DATE: 02/02/2005

PATENT APPLICATION: US/10/522,106

TIME: 15:31:42

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Output Set: N:\CRF4\02022005\J522106.raw

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2194 Ser Asn Asp Asp Ala Tyr Val Glu Ile Thr Leu Asp Val Arg Glu Asp
2195 65      70      75      80
2196 Ser Val Ala Val His Ser Val Lys Thr Ala Gly Gly Asp Asp Val Glu
2197      85      90      95
2198 Asp Pro Glu Leu Ala Leu Leu Ala Lys Gly Leu Glu Lys Lys Ser Thr
2199      100     105     110
2200 Leu Gly Ser Ser Leu Val Arg Asn Ala Ser Ser Arg Ile Arg Gln Val
2201      115     120     125
2202 Ser Gln Glu Leu Arg Arg Leu Ala Ser Leu Asn Lys Arg Pro Ile Pro
2203      130     135     140
2204 Thr Gly Arg Phe Asp Arg Asn Lys Ser Ala Ala His Ala Leu Lys
2205 145     150     155     160
2206 Gly Leu Lys Phe Ile Ser Lys Thr Asp Gly Gly Ala Gly Trp Ala Ala
2207      165     170     175
2208 Val Glu Lys Arg Phe Asp Glu Ile Thr Ala Ser Thr Thr Gly Leu Leu
2209      180     185     190
2210 Pro Arg Ala Lys Phe Gly Glu Cys Ile Gly Met Asn Lys Glu Ser Lys
2211      195     200     205
2212 Glu Phe Ala Val Glu Leu Tyr Asp Ala Leu Ala Arg Arg Arg Asn Ile
2213      210     215     220
2214 Thr Thr Asp Ser Ile Asn Lys Ala Gln Leu Lys Glu Phe Trp Asp Gln
2215 225     230     235     240
2216 Val Ala Asp Gln Ser Phe Asp Ser Arg Leu Gln Thr Phe Phe Asp Met
2217      245     250     255
2218 Val Asp Lys Asp Ala Asp Gly Arg Ile Thr Glu Glu Glu Val Arg Glu
2219      260     265     270
2220 Ile Ile Gly Leu Ser Ala Ser Ala Asn Arg Leu Ser Thr Ile Gln Lys
2221      275     280     285
2222 Gln Ala Asp Glu Tyr Ala Ala Met Ile Met Glu Glu Leu Asp Pro Asn
2223      290     295     300
2224 Asn Leu Gly Tyr Ile Met Ile Glu Asn Leu Glu Met Leu Leu Leu Gln
2225 305     310     315     320
2226 Ala Pro Asn Gln Ser Val Gln Arg Gly Gly Glu Ser Arg Asn Leu Ser
2227      325     330     335
2228 Gln Met Leu Ser Gln Lys Leu Lys His Thr Gln Glu Arg Asn Pro Ile
2229      340     345     350
2230 Val Arg Trp Tyr Lys Ser Phe Met Tyr Phe Leu Leu Asp Asn Trp Gln
2231      355     360     365
2232 Arg Val Trp Val Leu Leu Leu Trp Ile Gly Ile Met Ala Gly Leu Phe
2233      370     375     380
2234 Thr Trp Lys Tyr Ile Gln Tyr Lys Glu Lys Ala Ala Tyr Lys Val Met
2235 385     390     395     400
2236 Gly Pro Cys Val Cys Phe Ala Lys Gly Ala Ala Glu Thr Leu Lys Leu
2237      405     410     415
2238 Asn Met Ala Ile Ile Leu Phe Pro Val Cys Arg Asn Thr Ile Thr Trp
2239      420     425     430
2240 Leu Arg Asn Lys Thr Arg Leu Gly Ala Ala Val Pro Phe Asp Asp Asn

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RAW SEQUENCE LISTING

DATE: 02/02/2005

PATENT APPLICATION: US/10/522,106

TIME: 15:31:42

Input Set : A:\Sequence Listing.txt

Output Set: N:\CRF4\02022005\J522106.raw

2241 435 440 445
 2242 Leu Asn Phe His Lys Val Ile Ala Val Ala Ile Ala Leu Gly Val Gly
 2243 450 455 460
 2244 Ile His Gly Leu Ser His Leu Thr Cys Asp Phe Pro Arg Leu Leu Asn
 2245 465 470 475 480
 2246 Ala Ser Glu Glu Glu Tyr Glu Pro Met Lys Tyr Tyr Phe Gly Asp Gln
 2247 485 490 495
 2248 Pro Glu Ser Tyr Trp Trp Phe Ile Lys Gly Val Glu Gly Val Thr Gly
 2249 500 505 510
 2250 Ile Ile Met Val Val Leu Met Ala Ile Ala Phe Thr Leu Ala Thr Pro
 2251 515 520 525
 2252 Trp Phe Arg Arg Asn Arg Val Ser Leu Pro Lys Pro Phe His Lys Leu
 2253 530 535 540
 E--> 2254 Thr Gly Xaa Asn Ala Phe Trp Tyr Ser His His Leu Phe Val Ile Val
 2255 545 550 555 560
 2256 Tyr Thr Leu Phe Ile Val His Gly Glu Lys Leu Tyr Ile Thr Lys Asp
 2257 565 570 575
 2258 Trp Tyr Lys Arg Thr Asp Met Asp Val Leu Leu Thr Ile Pro Ile Ile
 2259 580 585 590
 2260 Leu Tyr Ala Ser Glu Arg Leu Ile Arg Ala Phe Arg Ser Ser Ile Lys
 2261 595 600 605
 2262 Ala Val Lys Ile Leu Lys Val Ala Val Tyr Pro Gly Asn Val Leu Ala
 2263 610 615 620
 2264 Leu His Met Ser Lys Pro Gln Gly Tyr Lys Tyr Lys Ser Gly Gln Tyr
 2265 625 630 635 640
 2266 Met Phe Val Asn Cys Ala Ala Val Ser Pro Phe Glu Trp His Pro Phe
 2267 645 650 655
 2268 Ser Ile Thr Ser Ala Pro Gly Asp Asp Tyr Leu Ser Val His Ile Arg
 2269 660 665 670
 2270 Thr Leu Gly Asp Trp Thr Arg Gln Leu Lys Thr Val Phe Ser Glu Val
 2271 675 680 685
 2272 Cys Gln Pro Pro Pro Asn Gly Lys Ser Gly Leu Leu Arg Ala Asp Tyr
 2273 690 695 700
 2274 Leu Gln Gly Glu Asn Asn Pro Asn Phe Pro Arg Val Leu Ile Asp Gly
 2275 705 710 715 720
 2276 Pro Tyr Gly Ala Pro Ala Gln Asp Tyr Lys Lys Tyr Glu Val Val Leu
 2277 725 730 735
 2278 Leu Val Gly Leu Gly Ile Gly Ala Thr Pro Met Ile Ser Ile Val Lys
 2279 740 745 750
 2280 Asp Ile Val Asn Asn Met Lys Ala Met Asp Glu Glu Glu Asn Ser Leu
 2281 755 760 765
 2282 Glu Asp Gly His Asn Asn Asn Met Ala Pro Asn Ser Ser Pro Asn Ile
 2283 770 775 780
 2284 Ala Lys Asn Lys Gly Asn Lys Ser Gly Ser Ala Ser Gly Gly Asn Asn
 2285 785 790 795 800
 2286 Phe Asn Thr Arg Arg Ala Tyr Phe Tyr Trp Val Thr Arg Glu Gln Gly
 2287 805 810 815
 2288 Ser Phe Asp Trp Phe Lys Gly Ile Met Asn Glu Ala Ala Glu Met Asp
 2289 820 825 830

←
 pls
 explain
 Xaa location.

pls see
 error
 explanation
 on page 5.

↑
 The type of errors shown exist throughout
 the Sequence Listing. Please check subsequent
 sequences for similar errors.

RAW SEQUENCE LISTING

DATE: 02/02/2005

PATENT APPLICATION: US/10/522,106

TIME: 15:31:42

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Output Set: N:\CRF4\02022005\J522106.raw

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2293      850      855      860
2294 His Ala Lys Asn Gly Val Asp Ile Val Ser Gly Thr Arg Val Lys Ser
2295 865      870      875      880
2296 His Phe Ala Lys Pro Asn Trp Arg Asn Val Tyr Lys Arg Ile Ala Leu
2297      885      890      895
2298 Asn His Pro Glu Ala Lys Val Gly Val Phe Tyr Cys Gly Ala Pro Ala
2299      900      905      910
2300 Leu Thr Lys Glu Leu Arg Gln His Ala Leu Asp Phe Ser His Lys Thr
2301      915      920      925
2302 Ser Thr Lys Phe Asp Phe His Lys Glu Asn Phe
2303      930      935

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VARIABLE LOCATION SUMMARY

DATE: 02/02/2005

PATENT APPLICATION: US/10/522,106

TIME: 15:31:43

Input Set : A:\Sequence Listing.txt

Output Set: N:\CRF4\02022005\J522106.raw,

Use of n's or Xaa's (NEW RULES):

Use of n's and/or Xaa's have been detected in the Sequence Listing.

Use of <220> to <223> is MANDATORY if n's or Xaa's are present.in <220> to <223> section, please explain location of n or Xaa, and which residue n or Xaa represents.

Seq#:1; Xaa Pos. 55 ✓

Seq#:2; Xaa Pos. 55 ✓

Seq#:15; N Pos. 1952 ✓

Seq#:15; Xaa Pos. 547 ✓

Seq#:16; Xaa Pos. 547 ✓

VERIFICATION SUMMARY

DATE: 02/02/2005

PATENT APPLICATION: US/10/522,106

TIME: 15:31:43

Input Set : A:\Sequence Listing.txt

Output Set: N:\CRF4\02022005\J522106.raw

L:10 M:270 C: Current Application Number differs, Replaced Current Application Number
L:15 M:283 W: Missing Blank Line separator, <210> field identifier
L:19 M:283 W: Missing Blank Line separator, <220> field identifier
L:23 M:283 W: Missing Blank Line separator, <400> field identifier
L:34 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:1 after pos.:193
L:49 M:283 W: Missing Blank Line separator, <400> field identifier
L:56 M:340 E: (46) "n" or "Xaa" used: Feature required, for SEQ ID#:2
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L:255 M:283 W: Missing Blank Line separator, <400> field identifier
L:379 M:283 W: Missing Blank Line separator, <220> field identifier
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M:341 Repeated in SeqNo=15
L:2185 M:283 W: Missing Blank Line separator, <400> field identifier
L:2254 M:340 E: (46) "n" or "Xaa" used: Feature required, for SEQ ID#:16
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Legal Staff
International Division

SEQUENCE LISTING

<110> Kogel, Karl-Heinz
Huckelhoven, Ralph
Trujillo, Marco

<120> Method for Obtaining the pathogenic resistance in plants

<130> 12810-00067-US

<140> US 10/522,106

<141> 2005-01-24

<160> 24

<170> PatentIn version 3.3

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<222> (2)..(337)

<223> coding for NADPH oxidase (fragment)

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Ile Glu Met His Asn Tyr Leu Thr Ser Val Tyr Glu Glu Gly Asp Ala
      20             25             30
cgg tca gca ctc atc aca atg ctg caa gct ctc aac cat gcc aag aat 145
Arg Ser Ala Leu Ile Thr Met Leu Gln Ala Leu Asn His Ala Lys Asn
      35             40             45
ggg gtc gat gta gtg tct ggm act cga gtc cgg aca cat ttt gca aga 193
Gly Val Asp Val Val Ser Xaa Thr Arg Val Arg Thr His Phe Ala Arg
      50             55             60
cca aat ttt aag agg gtg ctg tct aag gta gcc gcc aaa cat cct tat 241
Pro Asn Phe Lys Arg Val Leu Ser Lys Val Ala Ala Lys His Pro Tyr
      65             70             75             80
gcc aag ata gga gtg ttc tat tgc gga gct cca gtt ctg gcg cag gaa 289
Ala Lys Ile Gly Val Phe Tyr Cys Gly Ala Pro Val Leu Ala Gln Glu
      85             90             95
cta agc aac ctt tgc cat gag ttc aat ggc aaa tgc acg aca aaa ttc 337
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Ala	Lys	Ile	Gly	Val	Phe	Tyr	Cys	Gly	Ala	Pro	Val	Leu	Ala	Gln	Glu	
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<213> Oryza sativa

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<222> (1)..(2829)

<223> coding for NADPH oxidase

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Thr	Thr	Pro	Arg	Ser	Leu	Ser	Thr	Gly	Ser	Ser	Pro	Arg	Gly	Ser	Asp	
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gac	cgg	agc	tcc	gac	gac	ggg	gag	ctg	gtc	gag	gtc	acg	ctc	gac		144
Asp	Arg	Ser	Ser	Asp	Asp	Gly	Glu	Leu	Val	Glu	Val	Thr	Leu	Asp		
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Leu	Gln	Asp	Asp	Asp	Thr	Ile	Val	Leu	Arg	Ser	Val	Glu	Pro	Ala	Ala	
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Gly	Glu	Leu	Thr	Gly	Gly	Pro	Ser	Ser	Ser	Ser	Ser	Arg	Ser	Arg	Ser	
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Gly	Leu	Arg	Phe	Ile	Ser	Ser	Asn	Lys	Ala	Asn	Asn	Ala	Trp	Met	Glu	
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Tyr	Ile	Glu	Leu	Trp	Gln	Leu	Glu	Thr	Leu	Leu	Leu	Gln	Lys	Asp	Thr	
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tat	atg	aac	tat	agt	cag	gcc	ctt	agt	tac	aca	agc	caa	gca	ctg	agc	1056
Tyr	Met	Asn	Tyr	Ser	Gln	Ala	Leu	Ser	Tyr	Thr	Ser	Gln	Ala	Leu	Ser	
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Cys	Met	Ile	Ile	Ala	Phe	Thr	Leu	Ala	Thr	Arg	Trp	Phe	Arg	Arg	Ser	
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Arg	Ala	Gln	Leu	Asp	Arg	Thr	Arg	Ser	Gly	Ala	His	Lys	Ala	Leu	Arg
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Gly	Leu	Arg	Phe	Ile	Ser	Ser	Asn	Lys	Ala	Asn	Asn	Ala	Trp	Met	Glu
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aaa gag tat aat caa aag ggt gca aca aag ttc gag ttt cac aaa gaa	2880						
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cat ttt tag	2889						
His Phe							

<210> 6

<211> 962

<212> PRT

<213> Nicotiana tabacum

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Asp Leu Gln Asp Asp Asp Thr Ile Ile Leu Arg Ser Val Glu Pro Ala	
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Thr Val Ile Asn Ile Asp Ala Pro Asp Leu Pro Ala Gly Val Gly Ile	
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Ser Gln Glu Leu Lys Ala Glu Ala Val Ala Lys Ala Arg Gln Phe Ser	
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Gln Glu Leu Lys Ala Glu Leu Arg Arg Phe Ser Trp Ser His Gly His	
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Gly Thr Gly Asn Gly Val Asp Ser Ala Leu Ala Ala Arg Ala Leu Arg	

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Lys	Thr	Val	Ala	Ala	Ala	Ile	Val	Thr	Gly	Ile	Ile	Leu	His	Ala	Gly
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 675 680 685
 Ala Pro Gly Asp Asp Tyr Leu Ser Ile His Ile Arg Gln Leu Gly Asp
 690 695 700
 Trp Thr Gln Glu Leu Lys Arg Val Phe Ser Glu Ala Cys Glu Arg Pro
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 Glu Ala Gly Lys Ser Gly Leu Leu Arg Ala Asp Glu Asn Thr Lys Lys
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 Ser Leu Pro Lys Leu Leu Ile Asp Gly Pro Tyr Gly Ala Pro Ala Gln
 740 745 750
 Asp Tyr Arg Lys Tyr Asp Val Leu Leu Val Gly Leu Gly Ile Gly
 755 760 765
 Ala Thr Pro Phe Ile Ser Ile Leu Lys Asp Leu Leu Val Asn Ile Val
 770 775 780
 Lys Met Glu Glu Gln Ala Asp Leu Ala Ser Asp Phe Ser Gly Asn Ser
 785 790 795 800
 Asp Met Ser Val Ala Thr Ser Glu Gln Pro Ala Leu Asn Lys Ile Ser
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 Leu Lys Arg Arg Lys Ser Thr Leu Arg Thr Thr Asn Ala Tyr Phe Tyr
 820 825 830
 Trp Val Thr Arg Glu Gln Gly Ser Phe Asp Trp Phe Lys Gly Val Met
 835 840 845
 Asn Glu Val Ala Glu Leu Asp Gln Arg Gly Val Ile Glu Met His Asn
 850 855 860
 Tyr Leu Thr Ser Val Tyr Glu Glu Gly Asp Ala Arg Ser Ala Leu Ile
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 Thr Met Val Gln Ala Leu Asn His Ala Lys Asn Gly Val Asp Ile Val
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 Ser Gly Thr Arg Val Arg Thr His Phe Ala Arg Pro Asn Trp Lys Lys
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 Val Phe Ser Lys Thr Leu Thr Lys His Ala Asn Ala Arg Ile Gly Val
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 His Phe

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<211> 3733

<212> DNA

<213> Solanum tuberosum

<220>

<221> CDS

<222> (92)..(2980)

<223> coding for NADPH oxidase

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 Met Arg Gly Leu Pro Gly His
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 gaa cgc cgg tgg acg tcg gat acg gta tct tcc ggc aag gat tta agt 160
 Glu Arg Arg Trp Thr Ser Asp Thr Val Ser Ser Gly Lys Asp Leu Ser
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 Gly Glu Ser Ser Pro Gly Thr Asp Ser Gly Asn Ile Ser Gly Phe Ala

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Ser Glu Glu Phe Val Glu Val Ile Leu Asp Leu Gln Asp Asp Asp Thr			
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att att cta cgg agc gtt gaa ccg gct act gta atc aac att gat gct			304
Ile Ile Leu Arg Ser Val Glu Pro Ala Thr Val Ile Asn Ile Asp Ala			
	60	65	70
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Ser Asp Pro Ala Thr Gly Val Gly Ile Gly Gly Val Ser Ile Glu Thr			
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Pro Ala Ser Leu Thr Ser Thr Ser Gly Thr Arg Ser Pro Thr Met Arg			
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Arg Ser Thr Ser Asn Lys Leu Arg Gln Phe Ser Gln Glu Leu Lys Ala			
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gag gct gtc gcg aaa gcg aag cat ttc tcg caa gag ctt aaa gcg gag			496
Glu Ala Val Ala Lys Ala Lys His Phe Ser Gln Glu Leu Lys Ala Glu			
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Leu Arg Arg Phe Ser Trp Ser His Gly His Ala Ser Arg Thr Phe Ser			
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Pro Ala Ser Phe Phe Gln Asn Ala Val Gly Thr Gly Asn Gly Val			
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tgc atc ggt atg aag gat tca aag gaa ttt gca ttg gaa ttg ttt gat			832
Cys Ile Gly Met Lys Asp Ser Lys Glu Phe Ala Leu Glu Leu Phe Asp			
	235	240	245
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Ala Leu Ser Arg Arg Arg Arg Leu Lys Val Asp Lys Ile Ser Lys Glu			
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Glu Leu Tyr Glu Tyr Trp Ser Gln Ile Thr Asp Gln Ser Phe Asp Ser			
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cgg ctt cag atc ttc ttc gac atg gtg gac aag aat gaa gat ggt cga			976
Arg Leu Gln Ile Phe Phe Asp Met Val Asp Lys Asn Glu Asp Gly Arg			
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Ile Gly Glu Glu Glu Val Lys Glu Ile Ile Met Leu Ser Ala Ser Ala			
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Asn Lys Leu Ser Arg Leu Lys Glu Gln Ala Glu Glu Tyr Ala Ala Leu			
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Ile Met Glu Glu Leu Asp Pro Glu Arg Leu Gly Tyr Ile Glu Leu Trp			
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cag ctg gaa acg ctt ctc ctc caa aag gac act tac ctc aac tac agt			1168
Gln Leu Glu Thr Leu Leu Leu Gln Lys Asp Thr Tyr Leu Asn Tyr Ser			
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Gln Ala Leu Ser Tyr Thr Ser Gln Ala Leu Ser Gln Asn Leu Gln Gly	
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Leu Arg Lys Arg Ser Pro Ile Arg Arg Met Ser Thr Lys Leu Val Tyr	
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Ser Leu Gln Glu Asn Trp Lys Arg Ile Trp Val Leu Val Leu Trp Ile	
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Lys Ser Ala Phe Gln Val Met Gly Tyr Cys Leu Leu Thr Ala Lys Gly	
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Val Pro Phe Asp Asn Ile Asn Phe His Lys Thr Val Ala Ala Ala	
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Ile Val Thr Gly Ile Ile Leu His Ala Gly Asn His Leu Val Cys Asp	
490 495 500	
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Phe Pro Lys Leu Ile His Ala Asn Asn Thr Asn Tyr Gln Lys Tyr Leu	
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Val Asn Asp Phe Gly Pro Ser Gln Pro Gln Tyr Ile Asp Leu Val Lys	
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Gly Val Glu Gly Val Thr Gly Ile Ile Met Val Ile Leu Met Ala Ile	
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Ala Phe Thr Leu Ala Thr Arg Trp Phe Arg Arg Ser Leu Ile Lys Phe	
555 560 565	
ccc aaa cct ttt gat aga ctc act ggt ttc aat gcg ttc tgg tac tcg	1840
Pro Lys Pro Phe Asp Arg Leu Thr Gly Phe Asn Ala Phe Trp Tyr Ser	
570 575 580	
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His His Leu Leu Ile Ile Val Tyr Ile Val Leu Ile Ile His Gly Thr	
585 590 595	
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Phe Leu Tyr Leu Val His Asn Trp Tyr Ser Lys Thr Thr Trp Met Tyr	
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Tyr Lys Ser Gly Gln Tyr Met Phe Val Gln Cys Pro Ala Val Ser Pro	
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<211> 963

<212> PRT

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<400> 8

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Asp Leu Gln Asp Asp Asp Thr Ile Ile Leu Arg Ser Val Glu Pro Ala
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Thr Val Ile Asn Ile Asp Ala Ser Asp Pro Ala Thr Gly Val Gly Ile
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Gly Gly Val Ser Ile Glu Thr Pro Ala Ser Leu Thr Ser Thr Ser Gly
 85          90          95
Thr Arg Ser Pro Thr Met Arg Arg Ser Thr Ser Asn Lys Leu Arg Gln
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Phe Ser Gln Glu Leu Lys Ala Glu Ala Val Ala Lys Ala Lys His Phe
115          120          125
Ser Gln Glu Leu Lys Ala Glu Leu Arg Arg Phe Ser Trp Ser His Gly
130          135          140
His Ala Ser Arg Thr Phe Ser Pro Ala Ser Phe Phe Gln Asn Ala Val
145          150          155          160
Val Gly Thr Gly Asn Gly Val Asp Ser Ala Leu Ala Ala Arg Ala Leu
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Arg Arg Gln Arg Ala Gln Leu Asp Arg Thr Arg Ser Ser Ala His Lys
180          185          190
Ala Leu Arg Gly Leu Lys Phe Ile Ser Asn Asn Lys Thr Asn Gly Trp
195          200          205
Asn Glu Val Glu Asn Asn Phe Ala Lys Leu Ala Lys Asp Gly Tyr Leu
210          215          220
Tyr Arg Ser Asp Phe Ala Gln Cys Ile Gly Met Lys Asp Ser Lys Glu
225          230          235          240
Phe Ala Leu Glu Leu Phe Asp Ala Leu Ser Arg Arg Arg Arg Leu Lys
245          250          255
Val Asp Lys Ile Ser Lys Glu Glu Leu Tyr Glu Tyr Trp Ser Gln Ile
260          265          270
Thr Asp Gln Ser Phe Asp Ser Arg Leu Gln Ile Phe Phe Asp Met Val
275          280          285
Asp Lys Asn Glu Asp Gly Arg Ile Gly Glu Glu Glu Val Lys Glu Ile
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Ile Met Leu Ser Ala Ser Ala Asn Lys Leu Ser Arg Leu Lys Glu Gln
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325          330          335
Leu Gly Tyr Ile Glu Leu Trp Gln Leu Glu Thr Leu Leu Leu Gln Lys
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Met Ser Thr Lys Leu Val Tyr Ser Leu Gln Glu Asn Trp Lys Arg Ile

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<223> coding for NADPH oxidase

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cgg tgg acg tcg gat acg gtg tct tcc ggg aag gat tta agt ggt gag						220
Arg Trp Thr Ser Asp Thr Val Ser Ser Gly Lys Asp Leu Ser Gly Glu						
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Ser Ser Pro Gly Thr Asp Ser Gly Asn Ile Ser Gly Phe Ala Ser Glu						
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Glu Phe Val Glu Val Ile Leu Asp Leu Gln Asp Asp Asp Thr Ile Ile						
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Leu Arg Ser Val Glu Pro Ala Thr Val Ile Asn Ile Asp Gly Ser Asp						
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cct gct tcc gga gtc ggt att ggt gga gca tcg att gaa act ccg gcg						412
Pro Ala Ser Gly Val Gly Ile Gly Gly Ala Ser Ile Glu Thr Pro Ala						
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Ser Val Thr Ser Thr Ser Glu Thr Arg Ser Pro Met Met Arg Arg Ser						
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aca tct aat aag ttt cgt cag ttt tca cag gag ttg aaa gct gag gct						508
Thr Ser Asn Lys Phe Arg Gln Phe Ser Gln Glu Leu Lys Ala Glu Ala						
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gtt gcg aaa gcg aag cat ttc tcg caa gag ctt aaa gcg gag cta agg						556
Val Ala Lys Ala Lys His Phe Ser Gln Glu Leu Lys Ala Glu Leu Arg						
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Ser Phe Phe Gln Asn Ala Val Val Gly Thr Gly Asn Gly Val Asp Ser						
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	Asn	Asn	Lys	Thr	Asn	Gly	Trp	Asn	Glu	Val	Glu	Asn	Asn	Phe	Ala	Lys	
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	ctc	gct	aaa	gac	ggg	tac	ctt	tat	cgt	tcc	gat	ttc	gca	caa	tgc	atc	844
	Leu	Ala	Lys	Asp	Gly	Tyr	Leu	Tyr	Arg	Ser	Asp	Phe	Ala	Gln	Cys	Ile	
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	Gly	Gln	Tyr	Ser	Arg	Arg	Arg	Ser	Leu	Gln	Phe	Asn	Tyr	Arg	Leu	Ile	
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	Lys	Val	Asp	Lys	Ile	Ser	Gln	Glu	Glu	Leu	Tyr	Glu	Tyr	Trp	Ser	Gln	
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	Ile	Thr	Asp	Gln	Ser	Phe	Asp	Ser	Arg	Leu	Gln	Ile	Phe	Phe	Asp	Met	
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	Val	Asp	Lys	Asn	Glu	Asp	Gly	Arg	Ile	Gly	Glu	Glu	Glu	Val	Lys	Glu	
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	Ile	Ile	Met	Leu	Ser	Ala	Ser	Ala	Asn	Lys	Leu	Ser	Arg	Leu	Lys	Glu	
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	Arg	Met	Ser	Thr	Lys	Leu	Val	Tyr	Ser	Leu	Gln	Glu	Asn	Trp	Lys	Arg	
	410					415					420				425		
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1852	ata	gga	act	gtg	ggg	gag	gtg	gga	aaa	ggt	ctt	gat	ata	tac	cag	cct
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1948	act	ctc	aga	gat	ttt	cct	aaa	ccc	tta	aag	att	ctc	agc	cgg	agg	ttt
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2140	gtc	ser	agt	tac	tta	ggc	tca	cga	ttc	aga	ctt	act	thr	arg	gaa	gca
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	Gln	Leu	Thr	Leu	Val	Asn	Gly	Pro	Tyr	Ile	Ala	Val	Lys	Leu	Leu	Arg
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<221> misc_feature

<222> (547)..(547)

<223> The 'Xaa' at location 547 stands for Tyr, Cys, Ser, or Phe.

<400> 16

Met	Gln	Asn	Ser	Glu	Asn	His	His	Pro	His	His	Gln	His	His	His	Ser
1				5					10					15	
Asp	Thr	Glu	Ile	Ile	Gly	Asn	Asp	Arg	Ala	Ser	Tyr	Ser	Gly	Pro	Leu
		20						25					30		
Ser	Gly	Pro	Leu	Asn	Lys	Arg	Gly	Gly	Lys	Lys	Ser	Ala	Arg	Phe	Asn
		35					40					45			
Ile	Pro	Glu	Ser	Thr	Asp	Ile	Gly	Thr	Ser	Val	Gly	Thr	Gly	Gly	Lys
	50					55					60				
Ser	Asn	Asp	Asp	Ala	Tyr	Val	Glu	Ile	Thr	Leu	Asp	Val	Arg	Glu	Asp
	65				70					75				80	
Ser	Val	Ala	Val	His	Ser	Val	Lys	Thr	Ala	Gly	Gly	Asp	Asp	Val	Glu
			85						90					95	
Asp	Pro	Glu	Leu	Ala	Leu	Leu	Ala	Lys	Gly	Leu	Glu	Lys	Lys	Ser	Thr
		100						105					110		
Leu	Gly	Ser	Ser	Leu	Val	Arg	Asn	Ala	Ser	Ser	Arg	Ile	Arg	Gln	Val
		115					120					125			
Ser	Gln	Glu	Leu	Arg	Arg	Leu	Ala	Ser	Leu	Asn	Lys	Arg	Pro	Ile	Pro
	130					135					140				
Thr	Gly	Arg	Phe	Asp	Arg	Asn	Lys	Ser	Ala	Ala	Ala	His	Ala	Leu	Lys
	145				150					155				160	
Gly	Leu	Lys	Phe	Ile	Ser	Lys	Thr	Asp	Gly	Gly	Ala	Gly	Trp	Ala	Ala
			165						170					175	
Val	Glu	Lys	Arg	Phe	Asp	Glu	Ile	Thr	Ala	Ser	Thr	Thr	Gly	Leu	Leu

Pro	Arg	Ala	Lys	Phe	Gly	Glu	Cys	Ile	Gly	Met	Asn	Lys	Glu	Ser	Lys
		195					200					205			
Glu	Phe	Ala	Val	Glu	Leu	Tyr	Asp	Ala	Leu	Ala	Arg	Arg	Arg	Asn	Ile
	210					215					220				
Thr	Thr	Asp	Ser	Ile	Asn	Lys	Ala	Gln	Leu	Lys	Glu	Phe	Trp	Asp	Gln
225					230					235					240
Val	Ala	Asp	Gln	Ser	Phe	Asp	Ser	Arg	Leu	Gln	Thr	Phe	Phe	Asp	Met
				245					250					255	
Val	Asp	Lys	Asp	Ala	Asp	Gly	Arg	Ile	Thr	Glu	Glu	Glu	Val	Arg	Glu
			260					265					270		
Ile	Ile	Gly	Leu	Ser	Ala	Ser	Ala	Asn	Arg	Leu	Ser	Thr	Ile	Gln	Lys
		275					280					285			
Gln	Ala	Asp	Glu	Tyr	Ala	Ala	Met	Ile	Met	Glu	Glu	Leu	Asp	Pro	Asn
	290				295						300				
Asn	Leu	Gly	Tyr	Ile	Met	Ile	Glu	Asn	Leu	Glu	Met	Leu	Leu	Leu	Gln
305					310					315					320
Ala	Pro	Asn	Gln	Ser	Val	Gln	Arg	Gly	Gly	Glu	Ser	Arg	Asn	Leu	Ser
				325					330					335	
Gln	Met	Leu	Ser	Gln	Lys	Leu	Lys	His	Thr	Gln	Glu	Arg	Asn	Pro	Ile
			340					345					350		
Val	Arg	Trp	Tyr	Lys	Ser	Phe	Met	Tyr	Phe	Leu	Leu	Asp	Asn	Trp	Gln
	355						360					365			
Arg	Val	Trp	Val	Leu	Leu	Leu	Trp	Ile	Gly	Ile	Met	Ala	Gly	Leu	Phe
	370					375					380				
Thr	Trp	Lys	Tyr	Ile	Gln	Tyr	Lys	Glu	Lys	Ala	Ala	Tyr	Lys	Val	Met
385					390					395					400
Gly	Pro	Cys	Val	Cys	Phe	Ala	Lys	Gly	Ala	Ala	Glu	Thr	Leu	Lys	Leu
				405					410					415	
Asn	Met	Ala	Ile	Ile	Leu	Phe	Pro	Val	Cys	Arg	Asn	Thr	Ile	Thr	Trp
			420					425				430			
Leu	Arg	Asn	Lys	Thr	Arg	Leu	Gly	Ala	Ala	Val	Pro	Phe	Asp	Asp	Asn
		435					440					445			
Leu	Asn	Phe	His	Lys	Val	Ile	Ala	Val	Ala	Ile	Ala	Leu	Gly	Val	Gly
	450					455					460				
Ile	His	Gly	Leu	Ser	His	Leu	Thr	Cys	Asp	Phe	Pro	Arg	Leu	Leu	Asn
465					470					475					480
Ala	Ser	Glu	Glu	Glu	Tyr	Glu	Pro	Met	Lys	Tyr	Tyr	Phe	Gly	Asp	Gln
				485					490					495	
Pro	Glu	Ser	Tyr	Trp	Trp	Phe	Ile	Lys	Gly	Val	Glu	Gly	Val	Thr	Gly
			500					505					510		
Ile	Ile	Met	Val	Val	Leu	Met	Ala	Ile	Ala	Phe	Thr	Leu	Ala	Thr	Pro
	515						520					525			
Trp	Phe	Arg	Arg	Asn	Arg	Val	Ser	Leu	Pro	Lys	Pro	Phe	His	Lys	Leu
	530														

Thr Leu Gly Asp Trp Thr Arg Gln Leu Lys Thr Val Phe Ser Glu Val
 675 680 685
 Cys Gln Pro Pro Pro Asn Gly Lys Ser Gly Leu Leu Arg Ala Asp Tyr
 690 695 700
 Leu Gln Gly Glu Asn Asn Pro Asn Phe Pro Arg Val Leu Ile Asp Gly
 705 710 715 720
 Pro Tyr Gly Ala Pro Ala Gln Asp Tyr Lys Lys Tyr Glu Val Val Leu
 725 730 735
 Leu Val Gly Leu Gly Ile Gly Ala Thr Pro Met Ile Ser Ile Val Lys
 740 745 750
 Asp Ile Val Asn Asn Met Lys Ala Met Asp Glu Glu Glu Asn Ser Leu
 755 760 765
 Glu Asp Gly His Asn Asn Asn Met Ala Pro Asn Ser Ser Pro Asn Ile
 770 775 780
 Ala Lys Asn Lys Gly Asn Lys Ser Gly Ser Ala Ser Gly Gly Asn Asn
 785 790 795 800
 Phe Asn Thr Arg Arg Ala Tyr Phe Tyr Trp Val Thr Arg Glu Gln Gly
 805 810 815
 Ser Phe Asp Trp Phe Lys Gly Ile Met Asn Glu Ala Ala Glu Met Asp
 820 825 830
 His Lys Gly Val Ile Glu Met His Asn Tyr Cys Thr Ser Val Tyr Glu
 835 840 845
 Glu Gly Asp Ala Arg Ser Ala Leu Ile Thr Met Leu Gln Ser Leu His
 850 855 860
 His Ala Lys Asn Gly Val Asp Ile Val Ser Gly Thr Arg Val Lys Ser
 865 870 875 880
 His Phe Ala Lys Pro Asn Trp Arg Asn Val Tyr Lys Arg Ile Ala Leu
 885 890 895
 Asn His Pro Glu Ala Lys Val Gly Val Phe Tyr Cys Gly Ala Pro Ala
 900 905 910
 Leu Thr Lys Glu Leu Arg Gln His Ala Leu Asp Phe Ser His Lys Thr
 915 920 925
 Ser Thr Lys Phe Asp Phe His Lys Glu Asn Phe
 930 935

<210> 17
 <211> 2532
 <212> DNA
 <213> Oryza sativa

<220>
 <221> CDS
 <222> (1)..(2529)
 <223> coding for NADPH oxidase

<400> 17
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 Met Ala Ser Pro Tyr Asp His Gln Ser Pro His Ala Gln His Pro Ser
 1 5 10 15
 ggg ttg ccg agg ccg ccg ggg gcg ggg gcg ggt gcg gcg gcg ggc ggg 96
 Gly Leu Pro Arg Pro Pro Gly Ala Gly Ala Gly Ala Ala Gly Gly
 20 25 30
 ttc gcg cgg ggg ctg atg aag cag ccg tcg cgg ctg gcg tcc ggg gtg 144
 Phe Ala Arg Gly Leu Met Lys Gln Pro Ser Arg Leu Ala Ser Gly Val
 35 40 45
 agg cag ttc gcg tcg agg gtg tcg atg aag gtg ccg gag ggg gtg ggg 192
 Arg Gln Phe Ala Ser Arg Val Ser Met Lys Val Pro Glu Gly Val Gly
 50 55 60
 ggg atg cgg ccc ggt ggc ggg agg atg acg cgg atg cag tcc agc gcg 240
 Gly Met Arg Pro Gly Gly Arg Met Thr Arg Met Gln Ser Ser Ala
 65 70 75 80

cag	gtg	ggg	ctc	cgg	ggg	ctc	cgc	ttc	ctc	gac	aag	acg	tcc	ggc	ggg	288
Gln	Val	Gly	Leu	Arg	Gly	Leu	Arg	Phe	Leu	Asp	Lys	Thr	Ser	Gly	Gly	
				85					90					95		
aag	gag	ggg	tgg	aag	tcc	gtc	gag	cgc	cgc	ttc	gac	gag	atg	aac	cgc	336
Lys	Glu	Gly	Trp	Lys	Ser	Val	Glu	Arg	Arg	Phe	Asp	Glu	Met	Asn	Arg	
			100					105					110			
aac	ggc	cgc	ctc	ccc	aag	gag	agc	ttc	ggc	aag	tgc	atc	ggc	atg	ggg	384
Asn	Gly	Arg	Leu	Pro	Lys	Glu	Ser	Phe	Gly	Lys	Cys	Ile	Gly	Met	Gly	
			115				120					125				
gac	tcc	aag	gag	ttc	gcc	ggc	gag	ctg	ttc	gtg	gcg	ctg	gcg	cgg	cgg	432
Asp	Ser	Lys	Glu	Phe	Ala	Gly	Glu	Leu	Phe	Val	Ala	Leu	Ala	Arg	Arg	
	130					135					140					
agg	aac	ctg	gag	ccg	gag	gac	ggc	atc	acc	aag	gag	cag	ctc	aag	gag	480
Arg	Asn	Leu	Glu	Pro	Glu	Asp	Gly	Ile	Thr	Lys	Glu	Gln	Leu	Lys	Glu	
	145				150					155					160	
ttc	tgg	gag	gag	atg	acc	gac	cag	aac	ttc	gac	tcg	cgg	ctt	cgc	att	528
Phe	Trp	Glu	Glu	Met	Thr	Asp	Gln	Asn	Phe	Asp	Ser	Arg	Leu	Arg	Ile	
				165					170					175		
ttc	ttt	gac	atg	tgc	gac	aag	aat	ggc	gat	ggg	atg	ctc	acg	gaa	gat	576
Phe	Phe	Asp	Met	Cys	Asp	Lys	Asn	Gly	Asp	Gly	Met	Leu	Thr	Glu	Asp	
			180					185					190			
gag	gtc	aag	gag	gtt	att	ata	ctg	agt	gcg	tcg	gcg	aac	aag	ctg	gcg	624
Glu	Val	Lys	Glu	Val	Ile	Ile	Leu	Ser	Ala	Ser	Ala	Asn	Lys	Leu	Ala	
			195				200					205				
aag	ctg	aag	gga	cac	gcg	gcg	acg	tac	gcg	tcg	ctg	atc	atg	gag	gag	672
Lys	Leu	Lys	Gly	His	Ala	Ala	Thr	Tyr	Ala	Ser	Leu	Ile	Met	Glu	Glu	
	210					215					220					
ctg	gac	ccg	gac	gac	cgc	ggg	tac	atc	gag	atc	tgg	cag	ctg	gag	acg	720
Leu	Asp	Pro	Asp	Asp	Arg	Gly	Tyr	Ile	Glu	Ile	Trp	Gln	Leu	Glu	Thr	
	225				230					235					240	
ctg	ctg	cgc	ggc	atg	gtg	agc	gcg	cag	gcg	gcg	ccg	gag	aag	atg	aag	768
Leu	Leu	Arg	Gly	Met	Val	Ser	Ala	Gln	Ala	Ala	Pro	Glu	Lys	Met	Lys	
				245					250					255		
cgg	acg	acg	tcg	agc	ctc	gcg	agg	acg	atg	atc	ccg	tcg	cgg	tac	cgg	816
Arg	Thr	Thr	Ser	Ser	Leu	Ala	Arg	Thr	Met	Ile	Pro	Ser	Arg	Tyr	Arg	
			260					265					270			
agc	ccg	ctg	aag	cgg	cac	gtg	tcc	agg	acg	gtg	gac	ttc	gtg	cac	gag	864
Ser	Pro	Leu	Lys	Arg	His	Val	Ser	Arg	Thr	Val	Asp	Phe	Val	His	Glu	
			275				280					285				
aac	tgg	aag	cgg	atc	tgg	ctc	gtc	gcg	ctg	tgg	ctc	gcc	gtc	aac	gtc	912
Asn	Trp	Lys	Arg	Ile	Trp	Leu	Val	Ala	Leu	Trp	Leu	Ala	Val	Asn	Val	
	290					295					300					
ggc	ctc	ttc	gcc	tac	aag	ttc	gag	cag	tac	gag	cgc	gcc	gcg	ttc		960
Gly	Leu	Phe	Ala	Tyr	Lys	Phe	Glu	Gln	Tyr	Glu	Arg	Arg	Ala	Ala	Phe	
	305				310					315					320	
cag	gtg	atg	ggc	cac	tgc	gtg	tgc	gtg	gcc	aag	ggc	gcc	gcc	gag	gtg	1008
Gln	Val	Met	Gly	His	Cys	Val	Cys	Val	Ala	Lys	Gly	Ala	Ala	Glu	Val	
				325					330					335		
ctc	aag	ctc	aac	atg	gcg	ctc	atc	ctc	ctc	ccc	gtg	tgc	cgg	aac	acg	1056
Leu	Lys	Leu	Asn	Met	Ala	Leu	Ile	Leu	Leu	Pro	Val	Cys	Arg	Asn	Thr	
			340					345					350			
ctc	acc	acg	ctc	agg	tcc	acg	gcg	ctc	agc	cac	gtc	atc	ccc	ttc	gac	1104
Leu	Thr	Thr	Leu	Arg	Ser	Thr	Ala	Leu	Ser	His	Val	Ile	Pro	Phe	Asp	
			355				360					365				
gac	aac	atc	aac	ttc	cac	aag	gtg	atc	gcg	gcg	acc	atc	gcc	gcc	gcc	1152
Asp	Asn	Ile	Asn	Phe	His	Lys	Val	Ile	Ala	Ala	Thr	Ile	Ala	Ala	Ala	
			370			375					380					
acc	gcc	gtc	cac	acg	ctg	gcg	cac	gtc	acc	tgc	gac	ttc	ccg	agg	ctg	1200
Thr	Ala	Val	His	Thr	Leu	Ala	His	Val	Thr	Cys	Asp	Phe	Pro	Arg	Leu	
					390					395					400	
atc	aac	tgc	ccc	agc	gac	aag	ttc	atg	gcg	acg	ctg	ggg	ccg	aac	ttc	1248

Ile	Asn	Cys	Pro	Ser	Asp	Lys	Phe	Met	Ala	Thr	Leu	Gly	Pro	Asn	Phe	
				405					410					415		
ggg	tac	agg	cag	ccg	acg	tac	gcc	gac	ctg	ctg	gag	agc	gcc	ccc	ggc	1296
Gly	Tyr	Arg	Gln	Pro	Thr	Tyr	Ala	Asp	Leu	Leu	Glu	Ser	Ala	Pro	Gly	
				420					425					430		
gtc	acc	ggc	atc	ctc	atg	atc	atc	atc	atg	tcc	ttc	tcc	ttc	acg	ctg	1344
Val	Thr	Gly	Ile	Leu	Met	Ile	Ile	Ile	Met	Ser	Phe	Ser	Phe	Thr	Leu	
				435					440					445		
gcc	acg	cac	tcc	ttc	cgc	cgg	agc	gtc	gtc	aag	ctg	ccg	tcg	ccg	ctg	1392
Ala	Thr	His	Ser	Phe	Arg	Arg	Ser	Val	Val	Lys	Leu	Pro	Ser	Pro	Leu	
				450										460		
cac	cac	ctc	gcc	ggc	ttc	aac	gcc	ttc	tgg	tac	gcg	cac	cac	ctc	ctg	1440
His	His	Leu	Ala	Gly	Phe	Asn	Ala	Phe	Trp	Tyr	Ala	His	His	Leu	Leu	
				465										480		
gtg	ctc	gcc	tac	gtc	ctc	ctc	gtc	gtg	cac	tcc	tac	ttc	ata	ttc	ctc	1488
Val	Leu	Ala	Tyr	Val	Leu	Leu	Val	Val	His	Ser	Tyr	Phe	Ile	Phe	Leu	
				485										495		
acc	agg	gag	tgg	tac	aag	aaa	acg	aca	tgg	atg	tac	ctg	ata	gtc	cca	1536
Thr	Arg	Glu	Trp	Tyr	Lys	Lys	Thr	Thr	Trp	Met	Tyr	Leu	Ile	Val	Pro	
				500										510		
gtg	ctc	ttc	tat	gca	tgc	gag	aga	acg	atc	aga	aaa	gtt	cga	gag	aac	1584
Val	Leu	Phe	Tyr	Ala	Cys	Glu	Arg	Thr	Ile	Arg	Lys	Val	Arg	Glu	Asn	
				515										525		
aac	tac	cgc	gtg	agc	atc	gtc	aag	gca	gcg	att	tac	cca	gga	aat	gtg	1632
Asn	Tyr	Arg	Val	Ser	Ile	Val	Lys	Ala	Ala	Ile	Tyr	Pro	Gly	Asn	Val	
				530										540		
ctc	tct	ctt	cac	atg	aag	aag	ccg	ccg	ggt	ttc	aag	tac	aag	agc	ggg	1680
Leu	Ser	Leu	His	Met	Lys	Lys	Pro	Pro	Gly	Phe	Lys	Tyr	Lys	Ser	Gly	
				545										560		
atg	tac	ctg	ttt	gtg	aag	tgc	cct	gat	gtc	tct	cct	ttc	gaa	tgg	cat	1728
Met	Tyr	Leu	Phe	Val	Lys	Cys	Pro	Asp	Val	Ser	Pro	Phe	Glu	Trp	His	
				565										575		
ccc	ttc	tcc	atc	act	tct	gca	cct	gga	gat	gac	tac	ctg	agt	gtg	cat	1776
Pro	Phe	Ser	Ile	Thr	Ser	Ala	Pro	Gly	Asp	Asp	Tyr	Leu	Ser	Val	His	
				580										590		
atc	cgt	aca	cta	ggt	gac	tgg	acg	act	gaa	ctc	aga	aac	ctg	ttt	ggg	1824
Ile	Arg	Thr	Leu	Gly	Asp	Trp	Thr	Thr	Glu	Leu	Arg	Asn	Leu	Phe	Gly	
				595										605		
aag	gct	tgc	gag	gca	cag	ggt	act	tct	aag	aag	gct	acc	ctt	tca	aga	1872
Lys	Ala	Cys	Glu	Ala	Gln	Val	Thr	Ser	Lys	Lys	Ala	Thr	Leu	Ser	Arg	
				610										620		
ctt	gaa	act	aca	ggt	gtg	gcg	gac	gct	cag	aca	gag	gat	act	agg	ttt	1920
Leu	Glu	Thr	Thr	Val	Val	Ala	Asp	Ala	Gln	Thr	Glu	Asp	Thr	Arg	Phe	
				625										640		
cct	aag	gtc	ctt	att	gat	ggg	ccc	tat	ggt	gca	ccg	gcg	caa	aac	tac	1968
Pro	Lys	Val	Leu	Ile	Asp	Gly	Pro	Tyr	Gly	Ala	Pro	Ala	Gln	Asn	Tyr	
				645										655		
aag	aag	tat	gac	att	ctt	ttg	ctt	att	ggt	ctt	gga	att	ggt	gct	act	2016
Lys	Lys	Tyr	Asp	Ile	Leu	Leu	Leu	Ile	Gly	Leu	Gly	Ile	Gly	Ala	Thr	
				660										670		
cct	ttc	atc	agc	att	ctg	aag	gat	ctg	ttg	aac	aac	att	aaa	tcc	aac	2064
Pro	Phe	Ile	Ser	Ile	Leu	Lys	Asp	Leu	Leu	Asn	Asn	Ile	Lys	Ser	Asn	
				675										685		
gaa	gag	gtg	gaa	agc	ata	cat	ggt	tct	gag	ata	ggc	agc	ttc	aag	aac	2112
Glu	Glu	Val	Glu	Ser	Ile	His	Gly	Ser	Glu	Ile	Gly	Ser	Phe	Lys	Asn	
				690										700		
aat	ggg	cca	gga	aga	gct	tac	ttc	tac	tgg	gtg	acc	aga	gag	caa	ggg	2160
Asn	Gly	Pro	Gly	Arg	Ala	Tyr	Phe	Tyr	Trp	Val	Thr	Arg	Glu	Gln	Gly	
				705										720		
tcc	ttc	gag	tgg	ttt	aaa	gga	gtc	atg	aac	gat	gtc	gct	gaa	agt	gat	2208
Ser	Phe	Glu	Trp	Phe	Lys	Gly	Val	Met	Asn	Asp	Val	Ala	Glu	Ser	Asp	

				725					730					735		
cac	aat	aat	att	ata	gag	atg	cac	aat	tac	ctg	acc	agc	gtg	tat	gaa	2256
His	Asn	Asn	Ile	Ile	Glu	Met	His	Asn	Tyr	Leu	Thr	Ser	Val	Tyr	Glu	
			740					745					750			
gaa	ggc	gac	gca	agg	tca	gct	ttg	att	gcc	atg	gtt	cag	tca	ctt	caa	2304
Glu	Gly	Asp	Ala	Arg	Ser	Ala	Leu	Ile	Ala	Met	Val	Gln	Ser	Leu	Gln	
		755					760					765				
cat	gcc	aaa	aat	ggt	gtg	gat	atc	gtc	tcc	ggc	agc	agg	att	cgc	aca	2352
His	Ala	Lys	Asn	Gly	Val	Asp	Ile	Val	Ser	Gly	Ser	Arg	Ile	Arg	Thr	
	770					775					780					
cat	ttt	gcg	agg	cct	aac	tgg	aga	aag	gtg	ttc	tct	gac	ttg	gcg	aat	2400
His	Phe	Ala	Arg	Pro	Asn	Trp	Arg	Lys	Val	Phe	Ser	Asp	Leu	Ala	Asn	
	785				790					795					800	
gcc	cac	aaa	aac	tca	cgc	ata	ggg	gtt	ttc	tat	tgt	gga	tcc	cct	aca	2448
Ala	His	Lys	Asn	Ser	Arg	Ile	Gly	Val	Phe	Tyr	Cys	Gly	Ser	Pro	Thr	
			805						810					815		
ctc	acg	aaa	caa	ctc	aag	gat	ctt	tca	aaa	gaa	ttc	agc	cag	aca	acc	2496
Leu	Thr	Lys	Gln	Leu	Lys	Asp	Leu	Ser	Lys	Glu	Phe	Ser	Gln	Thr	Thr	
			820					825					830			
aca	act	aga	ttc	cac	ttc	cac	aag	gaa	aac	ttt	taa					2532
Thr	Thr	Arg	Phe	His	Phe	His	Lys	Glu	Asn	Phe						
		835					840									

<210> 18

<211> 843

<212> PRT

<213> Oryza sativa

<400> 18

Met	Ala	Ser	Pro	Tyr	Asp	His	Gln	Ser	Pro	His	Ala	Gln	His	Pro	Ser
1				5					10					15	
Gly	Leu	Pro	Arg	Pro	Pro	Gly	Ala	Gly	Ala	Gly	Ala	Ala	Ala	Gly	Gly
			20					25					30		
Phe	Ala	Arg	Gly	Leu	Met	Lys	Gln	Pro	Ser	Arg	Leu	Ala	Ser	Gly	Val
		35					40					45			
Arg	Gln	Phe	Ala	Ser	Arg	Val	Ser	Met	Lys	Val	Pro	Glu	Gly	Val	Gly
	50					55					60				
Gly	Met	Arg	Pro	Gly	Gly	Gly	Arg	Met	Thr	Arg	Met	Gln	Ser	Ser	Ala
	65				70					75					80
Gln	Val	Gly	Leu	Arg	Gly	Leu	Arg	Phe	Leu	Asp	Lys	Thr	Ser	Gly	Gly
			85						90					95	
Lys	Glu	Gly	Trp	Lys	Ser	Val	Glu	Arg	Phe	Asp	Glu	Met	Asn	Arg	
			100					105				110			
Asn	Gly	Arg	Leu	Pro	Lys	Glu	Ser	Phe	Gly	Lys	Cys	Ile	Gly	Met	Gly
		115					120					125			
Asp	Ser	Lys	Glu	Phe	Ala	Gly	Glu	Leu	Phe	Val	Ala	Leu	Ala	Arg	Arg
	130					135					140				
Arg	Asn	Leu	Glu	Pro	Glu	Asp	Gly	Ile	Thr	Lys	Glu	Gln	Leu	Lys	Glu
	145				150					155					160
Phe	Trp	Glu	Glu	Met	Thr	Asp	Gln	Asn	Phe	Asp	Ser	Arg	Leu	Arg	Ile
				165					170					175	
Phe	Phe	Asp	Met	Cys	Asp	Lys	Asn	Gly	Asp	Gly	Met	Leu	Thr	Glu	Asp
		180						185					190		
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Pro Gln Arg Ser Lys Lys	Glu Ser Phe Arg Thr	Arg Arg Ala Tyr Phe
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Tyr Tyr Thr Glu Ser Pro Tyr Asn Arg Gly Glu Ser Ser Ala Asn Val
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Ala Thr Thr Ser Asn Tyr Tyr Gly Glu Asp Glu Pro Tyr Val Glu Ile
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Thr Leu Asp Ile His Asp Asp Ser Val Ser Val Tyr Gly Leu Lys Ser
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Arg Gln Gly Arg Ser Gly Arg Ser Asn Ser Val Leu Lys Arg Leu Ala
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Lys Thr Asp Gly Val Thr Gly Trp Pro Glu Val Glu Lys Arg Phe Tyr
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Pro	Met	Ile	Ser	Ile	Val	Ser	Asp	Ile	Ile	Asn	Asn	Leu	Lys	Gly	Val
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Glu	Glu	Gly	Ser	Asn	Arg	Arg	Gln	Ser	Pro	Ile	His	Asn	Met	Val	Thr
			740					745					750		
Pro	Pro	Val	Ser	Pro	Ser	Arg	Lys	Ser	Glu	Thr	Phe	Arg	Thr	Lys	Arg
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oligonucleotide primer

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